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10/721,574	11/25/2003	Sean Ziao-an Zhang	5649-2239	5789

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EXAMINER	
PATEL, GAUTAM	

ART UNIT	PAPER NUMBER
2627	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/721,574	ZHANG ET AL.	
	Examiner	Art Unit	
	Gautam R. Patel	2627	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-20 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-20 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-20 are pending for the examination.

OBJECTION: IMPROPER DEPENDENT CLAIMS

2. Claims 17-20 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 17 depends upon itself; similarly claim 18 depends on itself, thus affecting dependency of claims 19 and 20.

Claim Rejections - 35 U.S.C. § 112

3. The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 17-20 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The limitations in claim 17-20 are not clear as to which claims they are referring to. Accordingly, the specification does not explain to one of ordinary skill in the art at the time of the invention, how to make and or use the invention comprising the limitations in claims 17-20.

4. The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 17-20 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 17-20 are confusing and unclear. It is not clear which limitations are depending on which claim.

Claim Rejections - 35 U.S.C. § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-16 are rejected under 35 U.S.C. § 102(e) as being anticipated by Forrest et al., US. Patent 7,179,534 (hereafter Forrest).

As to claim 1, Forrest discloses the invention as claimed [see Figs. 2, 6-8] including an information-storage medium and an information-storage-layer-optical-state detection means, comprising:

an information-storage medium that can be locally and reversibly switched between at least two optical states by application of electrical fields; and

an information-storage-layer-optical-state detection means [inherently present when voltage and currents are being detected] that detects and reports the optical states of regions of the information-storage medium [ABSTRACT; col. 1, line 64 to col. 2, line 33; col. 3, line 14-27; col. 5, line 34 to col. 6, line 2 and col. 6, line 18 to col. 7, line 6; also fig. 8].

6. The aforementioned claim 2, recites the following elements, inter alia, disclosed in Forrest:

a detector layer within the information-storage medium that responds differently to an interrogating signal depending on the optical state of the information-storage medium; and

a read/write device that applies the interrogating signal to regions of the information-storage medium and generates a reporting signal based on a response of the detector layer [ABSTRACT; col. 1, line 64 to col. 2, line 33; col. 3, line 14-27; col. 5, line 34 to col. 6, line 2 and col. 6, line 18 to col. 7, line 6; also fig. 8]. NOTE: switch performs the function of detector layer and read/write device. Also Forrest provides two-dimensional array [col. 6, line 61], so a detector layer is inherently present.

7. The aforementioned claim 3, recites the following elements, inter alia, disclosed in Forrest:

the detector layer responds to an electromagnetic-radiation-based interrogation signal that is transmitted through the information-storage medium, when the information-storage medium is in a first optical state, and that is not transmitted through the information-storage medium, when the information-storage medium is in a second optical state [ABSTRACT; col. 1, line 64 to col. 2, line 33; col. 3, line 14-27; col. 5, line 34 to col. 6, line 2 and col. 6, line 18 to col. 7, line 6; also fig. 8].

8. The aforementioned claim 4, recites the following elements, inter alia, disclosed in Forrest:

the detector layer responds to an electromagnetic-radiation-based interrogation signal that is transmitted through the information-storage medium by generating an electric current.

9. The aforementioned claim 5, recites the following elements, inter alia, disclosed in Forrest:

the read/write device applies an electromagnetic-radiation-based interrogation signal to regions of the information-storage medium, detects whether or not the detector layer generates an electric current in response to the applied electromagnetic-radiation-based interrogation signal, and returns an electric-current or electric-voltage signal when the detector layer generates an electric current in response to the applied electromagnetic-radiation-based interrogation signal [ABSTRACT; col. 1, line 64 to col. 2, line 33; col. 3, line 14-27; col. 5, line 34 to col. 6, line 2 and col. 6, line 18 to col. 7, line 6; also fig. 8].

10. The aforementioned claim 6, recites the following elements, inter alia, disclosed in Forrest:

an information-storage medium that includes an information-storage layer that can be locally and reversibly switched between at least two optical states by application of electrical fields; a detector layer within the information-storage medium that can detect whether or not an applied electromagnetic radiation beam is transmitted through the information-storage medium at different positions of the information-storage medium; and a read/write device that applies

electrical fields to write information into the information-storage layer and that applies electromagnetic-radiation beams in order to read information stored in the information-storage layer [ABSTRACT; col. 1, line 64 to col. 2, line 33; col. 3, line 14-27; col. 5, line 34 to col. 6, line 2 and col. 6, line 18 to col. 7, line 6; also fig. 8].

11. The aforementioned claim 7, recites the following elements, inter alia, disclosed in Forrest:

the information-storage layer comprises a two-dimensional optical state-change organic polymer having a relatively rigid, fused-ring, organic-dye-based planar network and acetylene-linked rotatable molecular components [ABSTRACT; col. 1, line 64 to col. 2, line 33; col. 3, line 14-27; col. 5, line 34 to col. 6, line 2 and col. 6, line 18 to col. 7, line 6; also fig. 8].

12. The aforementioned claim 8, recites the following elements, inter alia, disclosed in Forrest:

the rotatable molecular components can be rotational oriented by application of an electrical field.

13. The aforementioned claim 9, recites the following elements, inter alia, disclosed in Forrest:

the rotatable molecular components can be stably oriented in a rotational position coplanar with the relatively rigid, fused-ring, organic-dye-based planar network, leading to a fully conjugated organic-dye-based two-dimensional polymer that absorbs and/or reflects electromagnetic radiation of a particular frequency range, and wherein the rotatable molecular components can be stably oriented in a rotational position approximately orthogonal to the relatively rigid, fused-ring, organic-dye-based planar network, leading to a not-fully conjugated organic-dye-based two-dimensional polymer that is transparent to electromagnetic radiation of the particular frequency range [ABSTRACT; col. 1, line 64 to col. 2, line 33; col. 3, line 14-27; col. 5, line 34 to col. 6, line 2 and col. 6, line 18 to col. 7, line 6; also fig. 8].

14. The aforementioned claim 10, recites the following elements, inter alia, disclosed in Forrest:

a first, information-storage layer comprising a two-dimensional [col. 6, lines 50-66] optical state-change organic-polymer film that can be locally, stably, and reversibly switched between a first optical state that absorbs or reflects electromagnetic radiation of a particular frequency and a second optical state that is transparent to electromagnetic radiation of the particular frequency; a second, electrode layer that is transparent to electromagnetic radiation of the particular frequency; and a third, photodiode detector layer that, when illuminated by electromagnetic radiation of the particular frequency, generates a current [ABSTRACT; col. 1, line 64 to col. 2, line 33; col. 3, line 14-27; col. 5, line 34 to col. 6, line 2 and col. 6, line 18 to col. 7, line 6; also fig. 8].

15. The aforementioned claim 11, recites the following elements, inter alia, disclosed in Forrest:

the read/write device applies an electrical field of a first polarity to a small region of the first, information-storage layer to induce the first optical state within that region to represent a first binary value, applies an electrical field of a second polarity to a small region of the first, information-storage layer to induce the second optical state within that region to represent a second binary value, and illuminates a small region of the first, information-storage layer in order to access information stored in the information-storage layer by detecting whether or not the photodiode detector layer generates an electrical current in response to the illumination [ABSTRACT; col. 1, line 64 to col. 2, line 33; col. 3, line 14-27; col. 5, line 34 to col. 6, line 2 and col. 6, line 18 to col. 7, line 6; also fig. 8].

16. The aforementioned claim 12, recites the following elements, inter alia, disclosed in Forrest:

providing an optoelectronic memory device that includes an information-storage medium with an information-storage layer that can be locally and reversibly switched between at least two optical states by application of electrical fields and that includes a detector layer within the

information-storage medium that can detect whether or not an applied electromagnetic radiation beam is transmitted through the information-storage medium at different positions of the information-storage medium; when the bit of information has a first binary value, applying an electrical field of a first polarity to a small region of the first, information-storage layer to induce the first optical state within that region; and when the bit of information has a second binary value, an electrical field of a second polarity to the small region of the first, information-storage layer to induce the second optical state within that region [ABSTRACT; col. 1, line 64 to col. 2, line 33; col. 3, line 14-27; col. 5, line 34 to col. 6, line 2 and col. 6, line 18 to col. 7, line 6; also fig. 8].

17. The aforementioned claim 13, recites the following elements, inter alia, disclosed in Forrest:

subsequently illuminating a small region of the information-storage layer in order to access information stored in the information-storage layer by detecting whether or not the photodiode detector layer generates an electrical current in response to the illumination [ABSTRACT; col. 1, line 64 to col. 2, line 33; col. 3, line 14-27; col. 5, line 34 to col. 6, line 2 and col. 6, line 18 to col. 7, line 6; also fig. 8].

18. The aforementioned claim 14, recites the following elements, inter alia, disclosed in Forrest:

a two-dimensional optical state-change organic polymer having a relatively rigid, fused-ring, organic-dye-based planar network and acetylene-linked rotatable molecular components [ABSTRACT; col. 1, line 64 to col. 2, line 33; col. 3, line 14-27; col. 5, line 34 to col. 6, line 2 and col. 6, line 18 to col. 7, line 6; also fig. 8].

19. The aforementioned claim 15, recites the following elements, inter alia, disclosed in Forrest:

the rotatable molecular components can be stably oriented in a rotational position coplanar with the relatively rigid, fused-ring, organic-dye-based planar network, leading to a

fully conjugated organic-dye-based two-dimensional polymer that absorbs and or reflects electromagnetic radiation of a particular frequency range, and wherein the rotatable molecular components can be stably oriented in a rotational position approximately orthogonal to the relatively rigid, fused-ring, organic-dye-based planar network, leading to a not-fully conjugated organic-dye-based two-dimensional polymer that is transparent to electromagnetic radiation of the particular frequency range [ABSTRACT; col. 1, line 64 to col. 2, line 33; col. 3, line 14-27; col. 5, line 34 to col. 6, line 2 and col. 6, line 18 to col. 7, line 6; also fig. 8].

20. The aforementioned claim 16, recites the following elements, inter alia, disclosed in Forrest:

providing an information-storage medium that can be locally and reversibly switched between at least two optical states by application of electrical fields; and

using an information-storage-layer-optical-state detection means to detect and report the optical states of regions of the information-storage medium [ABSTRACT; col. 1, line 64 to col. 2, line 33; col. 3, line 14-27; col. 5, line 34 to col. 6, line 2 and col. 6, line 18 to col. 7, line 6; also fig. 8].

NOTE: Limitations in claims 17-20 are also disclosed by Forrest at [ABSTRACT; col. 1, line 64 to col. 2, line 33; col. 3, line 14-27; col. 5, line 34 to col. 6, line 2 and col. 6, line 18 to col. 7, line 6; also fig. 8].

21. A search based on the best understanding of the claims has been made to find the most pertinent art, but no statement about invention will be appropriate at this time regarding the allowableness of claims 17-20 and no art rejection will be made in this office action regarding the claims 17-20, due to the speculation required to interpret the claims because of their indefiniteness under 35 U.S.C. 112, 1st and 2nd paragraphs as noted above (see In re Steele, 134 USPQ 292).

Other prior art cited

22. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a) Lian et al. (US. Patent application 2003/0022414)
b) Saricifici et al. (US. patent 5331183)
c) Imai (US. patent 7214956)
d) Han et al. (US. patent application 2003/0017261).

Contact information

23. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gautam R. Patel whose telephone number is 571-272-7625. The examiner can normally be reached on Monday through Thursday from 7:30 to 6.

The appropriate fax number for the organization (Group 2600) where this application or proceeding is assigned is 571-273-8300.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Dwayne Bost, can be reached on (571) 272-7023.

Any inquiry of a general nature or relating to the status of this application should be directed to the Electronic Business Center whose telephone number is 866-217-9197 or the USPTO contact Center telephone number is (800) PTO-9199.

Gautam R. Patel
Primary Patent Examiner
Group Art Unit 2627

January 25, 2008